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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WOLDEKIDAN, HIBRET ASNAKE

ART UNIT

PAPER NUMBER

2613

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/576,640	Applicant(s) PEGG, STEVEN IAN	
	Examiner Hibret A. Woldekidan	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/26/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The specification is objected to because the background of the invention, summary, detailed description sections are not properly labeled. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A

“Sequence Listing” is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required “Sequence Listing” is not submitted as an electronic document on compact disc).

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the detailed structure of “the continuous, wavelength-selectively reflective structure” as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

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changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The specification states the dispersion compensation unit as element 23 of fig. 4. However element 23 does not exist in the figure. Examiner assumed element 16 of fig. 4 to be the dispersion compensation unit. Appropriate correction is required.

3. The X and Y axis labels of fig. 2 and fig. 3 are not in English. Appropriate correction is required

Claim Rejections - 35 USC § 112

Claims 9 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Fig. 4 of the specification shows a wavelength selective structure(18). However, in the specification it is not disclosed the wavelength structure comprising a the enclosed specification does not show a wavelength-selective reflective structure comprising, "...a merged demultiplexer and multiplexer, wherein the demultiplexer is configured to split the amplified incoming optical wavelength-multiplex

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signal at least into payload channels and a supervisory channel, and the multiplexer is configured to assemble the payload channels and the supervisory channel into an outgoing optical wavelength-multiplex signal....” as stated in the claims.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9,12,15,18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugaya et al. (6292289)

Considering claim 9 Sugaya discloses an amplifier node for an optical network(See Col. 7 lines Col. 12 lines 33-41, fig. 10 i.e. an optical repeater(8) in an optical network) comprising: at least one input port receiving an incoming optical wavelength-multiplex signal(See Col. 7 lines 45-50, fig. 10 i.e. the optical repeater(8) receiving wdm signal from the first terminal device(2)); a pre-amplifier receiving the incoming optical wavelength-multiplex signal(See Col. 12 lines 37-41, fig. 10 i.e. the optical repeater(8) has a pre-amplifier(50) receiving the incoming wdm signal from the first terminal(2)); a continuous, wavelength-selectively reflective structure comprising a merged demultiplexer and multiplexer(As stated Paragraph 34 of the current application, the wavelength selective structure is a combination of a multiplexing and a demultiplexing unit which splits of the supervisory

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channel(OSC) processes the supervisory channel and recombine the supervisory channel to the main signal.

Similarly, Sugaya discloses(See Col. 8 lines 53-61, fig. 10) an extracting and combining couplers(18,22) having the ability of extracting the supervisory channel(λ_{osc}) from the main signal at coupler(18) and recombine the main signal with the OSC channel(λ_{osc}) at the combining coupler(22). Therefore the couplers(18,22) are considered as a merging wavelength selective structure(18,2) for selectively directing the OSC channel(λ_{osc}) to the OSC regenerating unit(20) while the main signal bypasses the OSC unit(20)), wherein the demultiplexer is configured to split the amplified incoming optical wavelength-multiplex signal at least into payload channels and a supervisory channel(See Col. 2 lines 63-Col. 3 lines 3, Col. 8 lines 53-61, fig. 10 i.e. a wavelength selective structure(18) for splitting the amplified incoming signals into supervisor signal(λ_{osc}) and main signal), and the multiplexer is configured to assemble the payload channels and the supervisory channel into an outgoing optical wavelength-multiplex signal(See Col. 2 lines 63-Col. 3 lines 3, Col. 8 lines 53-61, fig. 10 i.e. a multiplexing structure(22) is configured to multiplex the supervisor signal(λ_{osc}) from the OSC unit(20) and the main signal), the continuous, wavelength-selectively reflective structure including a first gate receiving the incoming wavelength-multiplex signal from the pre-amplifier (See fig. 10 i.e. the wavelength selective structure(18) has a first gate(30A) for receiving the amplified signal from the preamplifier(50)), a second gate outputting the supervisory channel to an amplifier(See fig. 10 i.e. a second gate for outputting the supervisor

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signal(λ_{osc}) to the OSC unit(20)), a third gate receiving the supervisory channel from the amplifier(See fig. 10 i.e. a third gate for outputting the supervisor signal from the OSC regenerating unit(20)), and a fourth gate outputting the outgoing optical wavelength-multiplex signal(See fig. 10 i.e. a fourth gate for outputting the multiplexed main signal and OSC signal from the multiplexing unit(22)); and a post-amplifier receiving a dispersion compensated outgoing optical wavelength-multiplex signal and transmitting an amplified dispersion compensated outgoing optical wavelength-multiplex signal (See Col. 12 lines 45-54,fig. 10,14 i.e. a post amplifier(52) connected to the output port for receiving dispersion compensated multiplexed signals and amplifying the received signals); wherein the continuous, wavelength-selectively reflective structure is adapted to split off and to insert as the supervisory channel a wavelength(See Col. 2 lines 63-Col. 3 lines 3, Col. 8 lines 53-61, fig. 10,14 i.e. a wavelength selective structure(18) for splitting off the supervisory channel (λ_{osc}) from the main signal and a multiplexing unit(22) for inserting back the supervisory channel (λ_{osc}) to the main signal), the attenuation of which between the input port and the amplifier is substantially the same in a pumped state and an unpumped state of the pre-amplifier and post-amplifier(See Col. 4 lines 56-62, Col. 20 lines 14-18, fig. 10,14 i.e. the supervisory signal is processed in relation to the first or to the second amplifier to prevent signal degradation of the first and the second amplifiers can be prevented. Further (See Col. 20 lines 14-18) fig.14)there is an attenuation controller(216) provided in the amplifying

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unit(16)for keeping the attenuation level of the amplified WDM signals constant in any state).

Sugaya discloses a dispersion compensator receiving the outgoing optical wavelength-multiplex signal **(See Col. 19 lines 1-4, fig. 14,10 i.e. a dispersion compensating fiber(DCF) for compensating dispersion created in the optical fiber(6)).**

Sugaya does not specifically disclose the dispersion compensator (DCF) located after the multiplexing unit (22) for receiving the outgoing wdm signals. However since the purpose of the dispersion compensator is to compensate the dispersion created on fiber(6), it would be a matter of design choice to locate the DCF after the multiplexing unit(22)).

Sugaya does not explicitly disclose the attenuation of which between the input port and the amplifier is substantially the same in a pumped state and an unpumped state of the pre-amplifier and post-amplifier.

However Sugaya discloses the supervisory signal is processed in relation to the first or to the second amplifier to prevent signal degradation of the first and the second amplifiers**(See Col. 4 lines 56-62)**. Further, there is an attenuation controller automatic output level controller which is the automatic output level control unit**(ALC 254 of fig. 14)** to control the varaiaable attenuator(216) so that the attenuation level of the amplified WDM signals can be kept constant any state**(Col. 19 lines 39-43, Col. 20 lines 3-18, fig. 10,14)**. Therefore, since the automatic output level control unit keeps the output power constant in any state, it would have been obvious to one of ordinary skilled in the

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art to consider the attenuation of which between the input port and the amplifier is substantially the same in a pumped state and an unpumped state of the pre-amplifier and post-amplifier.

Considering Claim 12 Sugaya discloses the amplifier node of claim 9 wherein the amplifier comprises an active medium in series with a leveling filter to level a gain of the active medium in the wavelength band of the payload channels, and wherein the leveling filter is transparent for the supervisory channel **(Col. 19 lines 39-43 and lines 60-67, fig. 14 i.e. automatic output level control circuit(ALC)(254) controllers the attenuation level in the attenuator(216) so that the power output from the amplifying unit(16) to be constant. Further, the ALC in communication to the OSC unit(20) for receiving and sending a control signal, this shows that the ALC unit is transparent to the OSC).**

Considering claim 15 Sugaya discloses an optical network, comprising: an optical fiber to transmit an optical wavelength-multiplex signal comprising payload channels and a supervisory channel**(See Col. 7 lines 47-58, fig. 10 i.e. an optical fiber(6) for transmitting wavelength-multiplex main signals and supervisory signals);** a transmitter node comprising: at least one input port receiving an incoming optical wavelength-multiplex signal**(See Col. 7 lines 45-50, fig. 10 i.e. the optical repeater(8) receiving wdm signal from the first terminal device(2));** a pre-amplifier receiving the incoming optical wavelength-multiplex signal**(See Col. 12 lines 37-41, fig. 10 i.e. the optical repeater(8) has a pre-amplifier(50) receiving the incoming wdm signal from the first terminal(2));** a continuous, wavelength-selectively reflective structure

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comprising a merged demultiplexer and multiplexer(**As stated Paragraph 34 of the current application, the wavelength selective structure is a combination of a multiplexing and a demultiplexing unit which splits of the supervisory channel(OSC) processes the supervisory channel and recombine the supervisory channel to the main signal.**

Similarly, Sugaya discloses(See Col. 8 lines 53-61, fig. 10) an extracting and combining couplers(18,22) having the ability of extracting the supervisory channel(λ_{osc}) from the main signal at coupler(18) and recombine the main signal with the OSC channel(λ_{osc}) at the combining coupler(22). Therefore the couplers(18,22) are considered as a merging wavelength selective structure(18,2) for selectively directing the OSC channel(λ_{osc}) to the OSC regenerating unit(20) while the main signal bypasses the OSC unit(20)), wherein the demultiplexer is configured to split the amplified incoming optical wavelength-multiplex signal at least into payload channels and a supervisory channel(See Col. 2 lines 63-Col. 3 lines 3, Col. 8 lines 53-61, fig. 10 i.e. a wavelength selective structure(18) for splitting the amplified incoming signals into supervisor signal(λ_{osc}) and main signal), and the multiplexer is configured to assemble the payload channels and the supervisory channel into an outgoing optical wavelength-multiplex signal(See Col. 2 lines 63-Col. 3 lines 3, Col. 8 lines 53-61, fig. 10 i.e. a multiplexing structure(22) is configured to multiplex the supervisor signal(λ_{osc}) from the OSC unit(20) and the main signal), the continuous, wavelength-selectively reflective structure including a first gate receiving the incoming wavelength-multiplex signal from the pre-amplifier(See fig. 10 i.e. the

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wavelength selective structure(18) has a first gate(30A) for receiving the amplified signal from the preamplifier(50)), a second gate outputting the supervisory channel to an amplifier(See fig. 10 i.e. a second gate for outputting the supervisor signal(λ_{osc}) to the OSC unit(20)), a third gate receiving the supervisory channel from the amplifier, and a fourth gate outputting the outgoing optical wavelength-multiplex signal(See fig. 10 i.e. a third gate for outputting the supervisor signal from the OSC regenerating unit(20)); a post-amplifier outputting the outgoing optical wavelength-multiplex signal onto the optical fiber; and a dispersion compensator interposed between the continuous, wavelength-selectively reflective and the post-amplifier(See Col. 12 lines 45-54, fig. 14 i.e. a dispersion compensating fiber(DCF(218)) interposed between the wavelength selective structure(18) and the post amplifier(52)); and a receiver node to receive the optical wavelength-multiplex signal from the transmitter node(See fig. 4 i.e. two repeater nodes(8) connected in series. The second repeater node receives the wdm signals outputted from the first node through terminal(32c)), the receiver node(See fig. 9 i.e. the second repeater node comprises another repeater node(8))) comprising: a second demultiplexer configured to split the optical wavelength-multiplex signal into the supervisory channel and the payload channels(See Col. 8 lines 53-61 fig. 4 i.e. a second demultiplexer(18) for demultiplexing the wdm main and signal supervisory signal); and a sink for the supervisory channel(See Col. 8 lines 53-61 fig. 4 i.e. OSC circuitry(20) for receiving the supervisory channel from the demultiplexer (18)); wherein the multiplexer and demultiplexer are adapted to insert

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and extract, respectively, as the supervisory channel, a wavelength into/from the optical wavelength-multiplex signal **(See Col. 8 lines 53-61fig. 4 i.e. the demultiplexing unit(18) and the multiplexing(22) are adapted to extract and insert respectively the incoming OSC channel to the main wdm signals).**

Sugaya does not explicitly disclose the attenuation of which between the amplifier and the sink is substantially the same in pumped and unpumped states of the pre-amplifier and the post-amplifier.

However Sugaya discloses the supervisory signal is processed in relation to the first or to the second amplifier to prevent signal degradation of the first and the second amplifiers**(See Col. 4 lines 56-62)**. Further, there is an attenuation controller automatic output level controller which is the automatic output level control unit**(ALC 254 of fig. 14)** to control the variable attenuator(216) so that the attenuation level of the amplified WDM signals can be kept constant any state**(Col. 19 lines 39-43, Col. 20 lines 3-18, fig. 10,14)**. Therefore, since the automatic output level control unit keeps the output power constant in any state, it would have been obvious to one of ordinary skilled in the art to consider the attenuation of which between the amplifier and the sink or the OSC circuitry is substantially the same in pumped and unpumped states of the pre-amplifier and the post-amplifier.

Claim 18 is rejected for the same reason as in claim 12.

3. Claims 10,11,13,14,16,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugaya et al. (6292289) in view of Peragine (US 6,623,185)

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Considering claim 10 Sugaya discloses the amplifier node of claim 9 wherein the amplifier comprises an erbium-doped fiber amplifier(**See Col. 9 lines 50-55, fig. 5,10 i.e. the optical amplifier in the node is EDFA(16)),**

Sugaya further discloses the wavelength of the supervisory channel is between in the 1510 rang(**See Col. 8 lines 1-5).**

Sugaya does not specifically disclose the wavelength of the supervisory channel is between about 1600 and 1650 nm.

Peragine teaches the wavelength of the supervisory channel(OSC) is between about 1600 and 1650 nm(**See Col. See Col. 1 lines 36-42 i.e. the OSC having a wavelength range of 1610-16200 nm).**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Sugaya, and have the wavelength of the supervisory channel(OSC) to be between about 1600 and 1650 nm, as taught by Peragine, thus providing an efficient transmission system by providing the supervisory signal to be transmitted at a different transmission wavelength range than the main signal so that the supervisory signal and the main signal can be easily differentiate by their wavelength and modification can also be made in either of the main signal or the supervisory signals based on their wavelength.

Considering Claim 11 Peragine teaches the amplifier node of claim 10 wherein the wavelength of the supervisory channel is between about 1610 and 1650 nm(**See Col. See Col. 1 lines 36-42 i.e. the OSC having a wavelength range of 1610-16200 nm).**

Considering Claim 13 Sugaya discloses the amplifier node of claim 11 wherein the active medium is placed before the filter in the amplifier(**See fig. 14 i.e. the active medium(208) is placed before the variable attenuator(216)**).

Considering Claim 14 Sugaya discloses the amplifier node of claim 11, wherein the active medium is placed behind the filter in the amplifier(**See fig. 14 i.e. the active medium(208) is placed behind the variable attenuator(216)**).

Claim 16 is rejected for the same reason as in claim 10.

Claim 17 is rejected for the same reason as in claim 11.

Conclusions

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hibret A. Woldekidan whose telephone number is (571)270-5145. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 5712723078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. A. W./
Examiner, Art Unit 2613

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613